

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 13-17 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The limitations recited in the claims 13-17 are limitations that are directed to an intended use of the claimed device, and do not structurally further limit the apparatus of claim 1.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 3-5, 6, 10, and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are rejected because claim 3 recites the limitation "the cylindrical vessel" in line 5 of the claim. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, and 13-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Uchida (JP 11-190591).

Regarding claims 1, 2 and 13-17 Uchida discloses an apparatus for production of metal chloride comprising: a chlorination furnace (11) and a distributor (12, 13, 14), which is arranged at the bottom of the chlorination furnace, and wherein the distributor comprises a perforated plate (12) and a bed packed by ceramic particles (14), which encompasses applicant's pure ceramic particles (see Fig. 1 and Machine translation, parags. [0005] to [0007]).

Regarding claims 13-17 the limitations recited in the claims are directed to an intended use of the claimed device, and do not structurally further distinguish the claimed apparatus from the prior art. Neither the manner of operating a device nor a material or article worked upon further limit an apparatus claim. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666,667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida (JP 11-190591).

Regarding claim 8, the claim depends from claim 1 such that the reasoning applied to claim 1 above is applied herein for the dependent portion of the claim. Uchida further disclose that size of the ceramic particles and the thickness of the bed of ceramic particles (14) can be varied to control pressure loss and mobility of the ceramic

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particles (see Machine translation, parags. [0004]). Uchida is, however, silent with respect to the specific size of the ceramic particles. The recited limitation with respect to the specific size of the ceramic particles in claim 8 is not a patentable distinction over the prior art, because it is within the level of ordinary skill in the art at the time the invention was made to have selected a size in the range as claimed by applicant through a mere routine experimentation and optimization based on the teachings of Uchida. See MPEP 2144.05.

Regarding claim 9, the claim depends from claim 1 such that the reasoning applied to claim 1 above is applied herein for the dependent portion of the claim. Uchida further discloses that size of the ceramic particles and the thickness of the bed of ceramic particles (14) can be varied to control pressure loss and mobility of the ceramic particles (see Machine translation, parags. [0004]). Uchida is, however, silent with respect to the bulk density of the ceramic particles over the perforated plate. The recited limitation with respect to the bulk density of the ceramic particle in claim 9 is not a patentable distinction over the prior art, because it is within the level of ordinary skill in the art at the time the invention was made to have selected the thickness of the ceramic particles forming bed (14) in Uchida such that the bulk density be within a range as claimed by applicant through a mere routine experimentation and optimization based on the teachings of Uchida. See MPEP 2144.05.

5. Claims 3, 6, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida (JP 11-190591) as applied to claim 2 above, and further in view of Dunn, Jr. (3,699,206).

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Regarding claims 3, 6, and 10 the reasoning applied to claim 2 above is applied herein for the dependent portion of the claims to claim 2. Uchida is, however, silent with respect to an anticorrosive material for chlorine gas being provided as claimed. Dunn, Jr. discloses a process and apparatus for the production of titanium dioxide (see Abstract). Dunn, Jr. teaches that the reactor for the production of the metal chloride is composed of corrosion-resistant materials such as quartz or a ceramic such as fire brick capable of withstanding contact with chlorine at temperatures in excess of 1,250 °C (see col. 2, lines 17-23 and col. 3, lines 2-5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide anticorrosive material along the inner wall of the reactor of Uchida as claimed, because as evidenced by the reference Dunn, Jr. it is known in the art to provide anticorrosive material along the inner wall of a reactor used in the production of metal chloride (see col. 3, lines 2-5).

6. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida (JP 11-190591) and Dunn, Jr. (3,699,206) as applied to claim 3 above, and further in view of Nelson et al. (US 3,067,005).

Regarding claims 4 and 5, the claims depend from claim 3 such that the reasoning applied to claim 3 above is applied herein for the dependent portions of the claims to claim 3. The references Uchida and Dunn, Jr. fail to disclose the specific configuration in which the anticorrosive material is laid along the inner wall of the reaction vessel. However, the recited limitations in the claims are not patentable distinctions over the prior art, because, as evidenced by the reference Nelson et al. (see

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Fig. 2), it is known in the art to provide anticorrosive material such as those suggested by Dunn, Jr. in a configuration as recited in claims 4 and 5.

7. Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida (JP 11-190591) as applied to claim 1 above, and further in view of Nobuhara et al. (JP 01-282148).

Regarding claims 7 and 11, the claims depend from claim 1 such that the reasoning applied to claim 1 above is applied herein for the dependent portion of the claims. Uchida, however, fail to disclose the specific purity, kind, and porosity of the ceramic material used. Nobuhara et al. disclose a fused silica material comprising  $\geq 99.0\%$   $\text{SiO}_2$  and porosity of  $\leq 5\%$  for use as a refractory material in a chlorination furnace (see Abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the ceramic material disclosed in Nobuhara et al. as the ceramic material in the apparatus of Uchida because Nobuhara et al. teach that the ceramic material made in accordance to their invention minimizes the impurities present in the ceramic material that are capable of reacting with gaseous chlorine (see Abstract).

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida (JP 11-190591) and Dunn, Jr. (3,699,206) as applied to claim 10 above, and further in view of Nobuhara et al. (JP 01-282148).

Regarding claim 12, the claim depends from claim 10 such that the reasoning applied to claim 10 above is applied herein for the dependent portion of the claim. The references Uchida and Dunn, Jr. fail to disclose the specific purity and porosity of the

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ceramic material used. Nobuhara et al. disclose a ceramic material comprising  $\geq 99.0\%$   $\text{SiO}_2$  and porosity of  $\leq 5\%$  for use as a refractory material in a chlorination furnace (see Abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the ceramic material disclosed in Nobuhara et al. as the ceramic material in the apparatus of Uchida and/or Dunn, Jr. because Nobuhara et al. teach that the ceramic material made in accordance to their invention help prolong the service life of a chlorine furnace (see Abstract).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lessanework Seifu whose telephone number is (571)270-3153. The examiner can normally be reached on Mon-Thr 7:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. S./  
Examiner, Art Unit 1797

/Walter D. Griffin/  
Supervisory Patent Examiner, Art Unit 1797